

A new species of *Zachaeus* C. L. Koch from Azerbaijan (Opiliones, Phalangiidae)

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Abstract — A new harvestman species *Zachaeus shachdag* is described from the northern Azerbaijan and compared with congeners. The new species is distinguished by the structure of penis: shaft with characteristic dorsal keel and without lateral constriction.

Key words — Opiliones; Phalangiidae; Azerbaijan; new species

Introduction

The genus *Zachaeus* C. L. Koch, 1839 belongs to the subfamily Phalangiinae and consists of large, heavily built species. Most of them have strongly swollen chelicerae and, connected with this character, very thick legs of the first pair. Nearly all of them are in this respect very variable (good example is *Z. crista*, Šilhavý 1965). The variability can extend even beyond the generic ranges in the sense of Roewer (1912, 1923). The only secure way to distinguish species is a thorough investigation of the structure of male copulative organ. The differences are small but constant. It seems that *Zachaeus* is of a relatively recent origin, still poorly differentiated and each of its members having a relatively closed range. The species of the genus are distributed in the eastern part of the Mediterranean Region, south-eastern Europe and western Asia: SE Italy, Bosnia and Herzegovina, Croatia, Hungary, Czech Republic, Slovakia, Rumania, Bulgaria, Greece, Ukraine, SW Russia with Ciscaucasia, Georgia, Armenia, Azerbaijan, Turkey, Syria and Israel (Redikorzev 1936, Šilhavý 1965, Staręga 1967, 1976a, b, 1978, Martens 1978, Staręga & Chevrizov 1978, Snegovaya 1999, 2004, 2006, Blick & Komposch 2004, Chemeris & Kovblyuk 2005). A total of seven (or eight) species are currently included in the genus: *Z. crista* (Brullé, 1832), *Z. lupatus* (Eichwald, 1830), *Z. hebraicus* (Simon, 1884), *Z. anatolicus* (Kulczyński, 1903), *Z. kervillei* (Sörensen, 1912) (its systematic position is doubtful, because since the original description it has been never found again), *Z. birulai* Redikorzev, 1936, *Z. redikorzevi* Staręga & Chevrizov, 1978 and *Z. simferopolensis* Chemeris & Kovblyuk, 2005.

In the present paper we describe a new species of *Zachaeus* from Azerbaijan, so from the north-easternmost part of the genus range.

Description

Zachaeus shachdag sp. n.

Zachaeus anatolicus: Snegovaya 2004: 313–315, nec Kulczyński 1903 (misidentified).

Diagnosis. The present species is distinguished from congeners by no lateral constriction and the presence of a dorsal keel on the basal part of the shaft of penis.

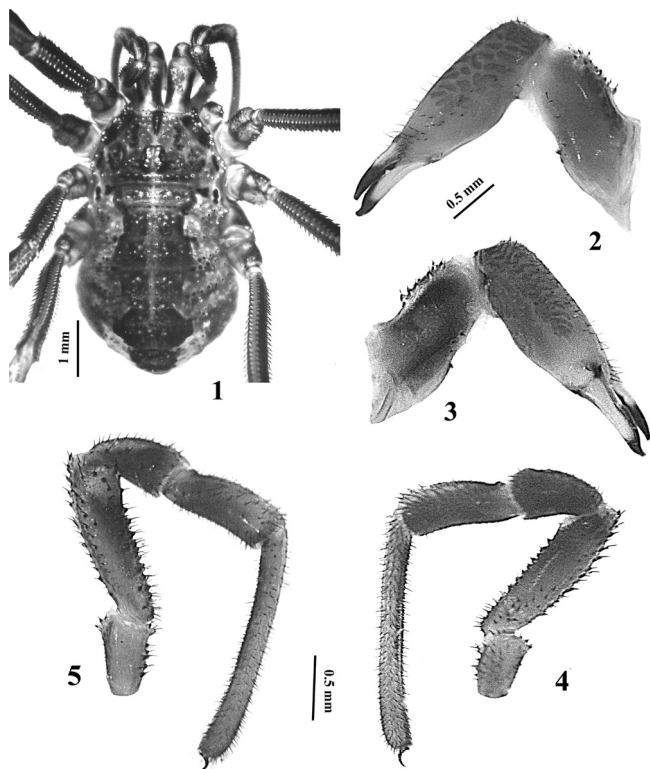
Male (holotype). Body 6.4 mm long, 3.2 mm wide (Fig. 1). Body surface covered with granulations. Tergites with single or double transversal rows of black-tipped denticles. Black-tipped denticles present in front of the eye mound and scattered over the carapace. The margins of cephalothorax and its front corners with numerous similar denticles. Supracheliceral lamellae with single denticles. Eye mound located about twice its lengths from the frontal margin, not very large, almost round, with rows of 7 black-tipped denticles on the eye rings. Venter with bristles, coxae and genital operculum densely covered with bristles.

Chelicerae (Figs. 2–3): basal segment 1.85 mm, distal segment 2.46 mm long. Basichelicerite dorsally with black-tipped denticles and bristles; distal segment with bristles only. Pedipalps (Figs. 4–5): femur densely covered with hair-tipped denticles and bristles, patella dorsally with denticles, other sides with bristles; tibia and tarsus with bristles, tarsus ventrally with granules. Length of palpal segments: femur 1.54, patella 0.77, tibia 1.0, tarsus 2.15; total length 5.46 mm.

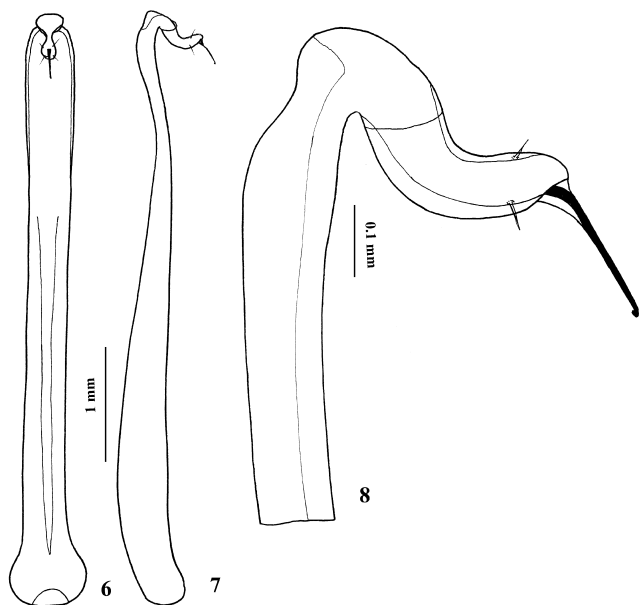
Legs of moderate length, I pair swollen. Femora with longitudinal rows of large denticles. Patella I, II without and patella and tibia III, IV with denticles. The other segments with bristles. Length of legs: I $2.92 + 0.92 + 2.69 + 3.0 + 5.69 = 15.22$, II $4.0 + 1.54 + 3.61 + 3.69 + 8.77 = 21.61$, III $2.84 + 1.23 + 2.38 + 3.69 + 6.15 = 16.29$, IV $4.61 + 1.54 +$

$3.61 + 6.38 + 8.46 = 24.6$ mm.

Penis. Shaft straight, without visible constriction but with distinct dorsal keel in basal half (Figs. 6–7); laterally slightly curved; glans (Fig. 8) banana-shaped, with two bristles on each side. Length of the shaft 4.23 mm, glans 0.42



Figs. 1–5. *Zachaeus shachdag* sp. n., male, holotype. Dorsal view of body (1). Prolateral (2) and retrolateral (3) views of right chelicera. Prolateral (4) and retrolateral (5) views of right pedipalpus.



Figs. 6–8. *Zachaeus shachdag* sp. n., male, holotype. Dorsal (6) and lateral (7) views of penis. Lateral view of glans (8).

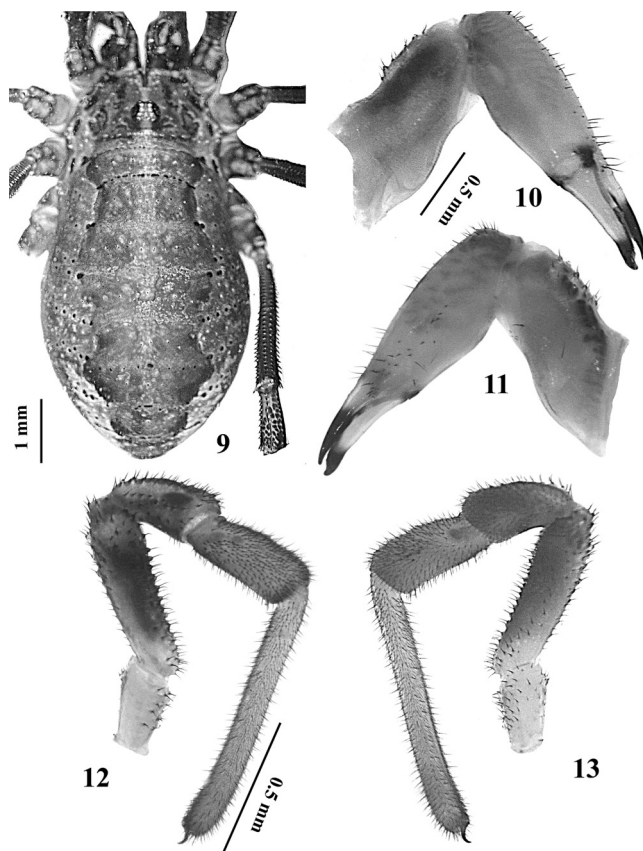
mm, stylus 0.22 mm.

Coloration. Body brown with darker anterior part of carapace and saddle, also with more dark and light spots on whole body. Longitudinal stripe light brown. Venter dirty-yellow with small dark brown spot, coxae dark brown. Legs, chelicerae and pedipals brown with dark brown spots.

Female (paratype). It differs from male by much larger size (9.7 mm long, 4.5 mm wide) and oval form of the body (Fig. 9). Basichelicerite 1.77 mm, distal segment 2.38 mm long (Figs. 10–11). Length of palpal segments: femur 1.54, patella 0.92, tibia 1.08, tarsus 2.3; total length 5.84 mm (Figs. 12–13). Length of legs: I $2.77 + 1.54 + 2.46 + 2.85 + 5.61 = 15.23$, II $4.31 + 1.69 + 3.85 + 3.77 + 10.15 = 23.77$, III $3.08 + 1.23 + 2.38 + 3.69 + 6.31 = 16.69$, IV $4.77 + 1.77 + 3.54 + 6.54 + 8.61 = 25.23$ mm.

Etymology. The species is named after its type locality.

Material. Holotype: 1♂, Azerbaijan, Gusar [Qusar] district, near Mt. Shakhdag, 3000 m a.s.l., August 2001, H. Aliyev, E. Guseinov & N. Snegovaya leg. (ZIN); Paratypes: 3♂, same data as for the holotype (2♂-RCWS-II/0092) (1♂-IZB N 100); 2♂, 2♀, Azerbaijan, Ismailly [Ismaylli], Khanaya, 21 June 2002, H. Aliyev & N. Snegovaya leg. (IZB N 108); 2♂, 3♀, Ismailly, Khanaya, forest near spring, 25 June 2003, N. Snegovaya leg. (2♀-IZB N 163), (2♂, 1♀-



Figs. 9–13. *Zachaeus shachdag* sp. n., female, paratype. Dorsal view of body (9). Retrolateral (10) and prolateral (11) views of right chelicera. Retrolateral (12) and prolateral (13) views of right pedipalpus.

IZB N 165); 1♀, same place and collector as above, 23 July 2003 (IZB 174).

Comparative material. *Zachaeus birulai* Redikorzev-3♂, 4♀: Azerbaijan, Lenkoran, Azfilial, 30 May-2 June 2006, N. Snegovaya leg. (IZB). *Z. anatolicus* (Kulczyński)-1♂, 1♀: Bulgaria, Sofia, exper. station "Vrazhdebna", 21 July 1999, R. Kostova leg. (IZB); 4♂, 9♀: Greece, Samos, base of Mt. Spiliani, pile of stones overgrown with herbaceous plants, 23 April 1979, A. Riedel leg. (MiZ PAN). *Z. crista* (Brullé)-3♂, 2♀: Hungary, Budapest, Coll. W. Kulczyński (MiZ PAN).

Repositories of the material. ZIN — Zoological Institute, Russian Academy of Sciences, Sankt-Petersburg; IZB — Zoological Institute NAS of Azerbaijan, Baku; MiZ PAN — Museum and Institute of Zoology, Polish Academy of Sciences, Warszawa; RCWS — Reference collection of W. Staręga, Warszawa.

Comparison with other species

Characterization of each species in the genus *Zachaeus* is extremely difficult, as they are morphologically very similar and simultaneously variable (Šilhavý 1965 for *Z. crista*). *Z. schachdag* differs from all other species of the genus by its structure of the penis shaft: no lateral constriction and the characteristic dorsal keel in basal part. The body coloration is similar in nearly all species: brown with a yellowish-white longitudinal middle line — the only exception is *Z. anatolicus*, where the middle line is mostly absent and in many females the abdomen is blackish-brown. *Zachaeus hebraicus* can be distinguished to some extent from other species by having body sides much whitened. Some difference could be found in male chelicerae: in *Z. crista*, *Z. lupatus*, *Z. birulai*, *Z. redikorzevi* and *Z. simferopolensis* they are enlarged and strongly armed, in other species they are almost same as in females. The armature of the legs I and pedipalps is similar in all species, variable and misleading as a diagnostic character.

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